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| EXAMINER | |
|---|---|
| WINTER, JOHN M | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3685 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patent@sawyerlawgroup.com

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/719,399 | COLLBERG ET AL. | |
| | Examiner | Art Unit | |
| | JOHN M. WINTER | 3685 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *22 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-28 and 30-54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28, 30-54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Acknowledgements*

1. The Applicants amendment filed on December 22, 2008 is acknowledged, 1-28 and 30-54 remain pending .

### *Response to Arguments*

2. The Applicants arguments filed on December 22, 2008have been fully considered.

3. The Applicant submits that the claims, as presently presented, recite a clear transformation of the underlying subject matter to a different state. The Examiner responds that the Applicants process merely manipulates data without producing a unique result,(i.e. a process of "determining" and "storing") therefore the Examiner submits that no transformation of the underlying subject matter occurs .

Applicant submits that Moskowitz et al only discloses encoded essential code resources that are stored in the static structure of the software. There is no disclosure, teaching or suggestion that a watermark is embedded in the execution state of a program, furthermore, Moskowitz et al describes a system which prescribes where the encoded data or source is located (refer column 6, lines 18 to 20 of Moskowitz et al). Recognition or extraction does not involve any search for the location of the encoded resource. Therefore, Moskowitz et al does not disclose the step of examining the execution state of the software objection when the software is being run with the input sequence.

The Examiner responds that the Applicants specification as amended states "the software object may be a program or piece of program. the state of the software object corresponds to the current values held in the stack, heap, global variables, registers, program counter

and the like. The Examiner submits that the Applicants language "and the like" does not preclude essential code resources that are stored in the static structure of the software, therefore the Applicants arguments in regard to the "state" of the software object are not persuasive.

### *Claim Rejections - 35 USC § 101*

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-28, 30-54 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.
5. Claims 1,18, 23, 27, 30-40 and 49-54 disclose a mere nominal recitation of technology and fails to transform the underlying subject matter to a different state, therefore the claimed method is non-statutory and rejected under 35 U.S.C. 101 (*Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876)).
6. Claims 2-17, 19-22, 24-26, 28 and 41-48 are also rejected as each depends from the abobe rejected claims.

### *Claim Rejections - 35 USC § 103*

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordi
nary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-28, 30-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moskowitz et al. (US Patent 5,745,569) in view of Shur (US Patent 6,330,672).

As per claim 1,

Moskowitz et al. ('569)discloses a computerized method of watermarking a software object comprising the steps of:

determining an input sequence; (Column 5, line 65 – column 6, line 8 [license corresponds to input sequence] )

storing the a watermark in an execution state of the software object in a manner that the watermark is detectable by a computerized recognizer which examines the state of the software object when the software is being run with the input sequence (column 6, lines 9-54 )

Moskowitz et al. ('569) does not explicitly disclose determining a watermark. Shur (‘672) discloses determining a watermark (Abstract). It would be obvious to one having ordinary skill in the art at the time of the invention to combine Moskowitz et al. ('569) method with Shur (‘672)’s teaching in order to determine whether the content is original or pirated.

9. As per claim 2,

Moskowitz et al. ('569)discloses the method as claimed in claim 1 wherein the software object is a program or a piece of a program. (Abstract)

10. As per claim 3,

Moskowitz et al. ('569) discloses the method as claimed in claim 1,

wherein the watermark is detectable in the state of the software object formed by the current values held in at least one of:

(a) at least one stack; (b) at least one heap; (c) at least one data register; and (d) at least one global variable; of the software object. (Column 6, lines 18-20)

11. As per claim 4,

Moskowitz et al. ('569) discloses the method OF claim 1 or 2 or 3

12. wherein the watermark is stored in an execution state of the software object whereby the input sequence is constructed which, when fed to an application of which the software object is a part, will make the software object enter a second state which is a representation of the watermark, the representation being validated or checked by examining the execution state of the software object. (column 6, lines 9-54 )

13. As per claim 5,

Moskowitz et al. ('569) discloses the method as claimed in claim 1,

wherein the watermark is embedded in an execution trace of the software object

whereby, as a special input is fed to the software object, an address/operator trace is monitored and, based on a property of the trace, the watermark is extracted. (column 6, lines 9-54 )

14. As per claim 6,

Moskowitz et al. (' 569)discloses the method of claim 1,

Moskowitz et al. (' 569) does not specifically disclose "the watermark is embedded in a topology of a dynamically built graph structure"

Official Notice is taken that "the watermark is embedded in a topology of a dynamically built graph structure" is common and well known in prior art in reference to computer programs. It would have been obvious to one having ordinary skill in the art at the time the invention was made that the watermark is embedded in the topology of a dynamically built graph structure because this is a fundamental representation of a watermark.

15. As per claim 7,

Moskowitz et al. ('569) discloses the method as claimed in claim 6,

Wherein the dynamically built graph structure is detectable in a data structure of the program column 6, lines 9-54 )

16. As per claim 8,

Moskowitz et al. ('569) discloses the method of claim 1,

further comprising the step of building a computerized recognizer concurrently with the input sequence and the watermark. (Column 6, lines 9-32)

17. As per claim 9,

Moskowitz et al. ('569) discloses the method of claim 8

herein the computerized recognizer is a function adapted to identify and extract the watermark from all other dynamic structures on a heap or stack.(Column 6, lines 9-32)

The Examiner notes that as written the term "all other dynamic structures on a heap or stack" comprises the entire program, as it is being run, even if data is read from a hard drive (such as a registration key) it will be stored in an allocated memory position in the heap or the stack.

18. As per claim 10,

Moskowitz et al. ('569) discloses the method of claim 8

wherein the watermark incorporates a marker that will allow the computerized recognizer to recognize it easily.(Column 6, lines 38-56)

19. As per claim 11,

Moskowitz et al. ('569) discloses the method of claim 8

the recognizer is retained separately from the program and whereby the recognizer inspects the state of the program(Column 6, lines 9-32)

20. As per claim 12,

Moskowitz et al. ('569) discloses the method of claim 8

Official Notice is taken that "wherein the computerized recognizer is dynamically linked with the program when it is checked for the existence of a watermark" is common and well known in prior art in reference to operating systems. It would have been obvious to one having ordinary skill in the art at the time the invention was made that the computerized recognizer is dynamically linked with the program when it is checked for the existence of a watermark in order to utilize memory more efficiently. The Examiner notes that it is common in many operating systems to dynamically link and unlink modules (libraries, drivers etc..) from the OS kernel to conserve the amount of memory used by the kernel.

21. As per claim 13,

Moskowitz et al. ('569) discloses the method of claim 1

the software object is a part of an application that is obfuscated or incorporates tamper-proofing code (Abstract)

22. As per claim 14,

Moskowitz et al. (' 569) discloses the method of claim 8,

wherein the computerized recognizer checks the watermark for a signature property. (Column 6, lines 38-56)

23.

As per claim 15,

Moskowitz et al. ('569) discloses the method of claim 14

Official Notice is taken that "the signature property is evaluated by testing for a specific result from a hard computational problem." is common and well known in prior art in reference to digital security. It would have been obvious to one having ordinary skill in the art at the time the invention was made that the signature property is evaluated by testing for a specific result from a hard computational problem in order to make signature non trivial to crack. The Examiner notes that this feature is common to public key encryption (i.e. RSA).

24. As per claim 16,

Moskowitz et al. ('569) discloses the method of claim 14 including the step of creating a number having at least one numeric property which is embedded in the topology of the watermark whereby the signature property is evaluated by testing the at least one or more numeric property.(Colunm 6, lines 38-56)

25. As per claim 17

Moskowitz et al. (' 569) discloses the method of claim 16

Official Notice is taken that "the signature property is evaluated by testing whether the

number is a product of two primes" is common and well known in prior art in reference to digital security. It would have been obvious to one having ordinary skill in the art at the time the invention was made that the signature property is evaluated by testing whether n is the product of two primes order to make signature non trivial to crack. The Examiner notes that this feature is common to public key encryption (i.e. RSA).

26. Claims 18-28, 30-54 are in parallel with claims 1-17, these claims contain the same limitations as claims 1-17 and are rejected for at least the same reasons.

## *Conclusion*

27. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN M. WINTER whose telephone number is (571)272-6713. The examiner can normally be reached on M-F 8:30-6, 1st Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Calvin Hewitt can be reached on (571) 272-6709. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JMW

/Calvin L Hewitt II/
Supervisory Patent Examiner, Art Unit 3685